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(54) **TORQUE TOOL CALIBRATION FIXTURE**

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(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,171,647	A	10/1979	Herrgen
4,583,411	A	4/1986	Hales
5,099,678	A	3/1992	Grabovac et al.
5,181,425	A	1/1993	Livingston
7,885,780	B2	2/2011	Lucke
8,117,887	B2	2/2012	Schwafertz et al.

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(57) **ABSTRACT**

A torque tool calibration fixture includes a support and a mounting plate movably secured thereto. The plate is configured to have a torque tool mounted thereto for calibration. A transducer is secured to the mounting plate for movement therewith. The transducer has one end portion configured to be coupled to a drive end of a head portion of the associated torque tool and an opposite end portion. A joint assembly is fixed to the support and coupled to the opposite end portion of the transducer. The joint assembly defines a rotational axis and the mounting plate is movable along the rotational axis. A torque analyzer is in communication with the transducer. Rotation of the joint assembly results in the joint assembly forming a hard joint where further rotation of the joint assembly is prevented. The analyzer indicates actual exerted torque on the hard joint as measured by the transducer.

20 Claims, 5 Drawing Sheets